

SBCCOM'S CONTRIBUTIONS TO TRANSFORMING THE FORCE

Introduction

Army Chief of Staff (CSA) GEN Eric K. Shinseki stated that "the soldier remains the centerpiece of our formation." To this end, the U.S. Army Soldier and Biological Chemical Command (SBCCOM), through its research, development, and application of soldier, soldier-support, chemical-biological defense, and smoke/obscurant technologies, is committed to the soldier and to creating an enhanced force that is deployable, survivable, and sustainable. Moreover, SBCCOM is committed to developing innovative technologies to meet Shinseki's vision of improved strategic responsiveness and a reduced logistical footprint for deploying and sustaining U.S. forces.

Outlined below are the contributions of SBCCOM's Research, Development and Engineering Center (RDEC) and program/project/product managers (PMs) in support of the CSA's vision.

PM, NBC Defense Systems

The PM, NBC Defense Systems is addressing nuclear, biological and chemical (NBC) threats to the interim brigade by providing technologies and new equipment supporting detection, protection, and early warning and reporting of NBC events. These capabilities will be integrated into the interim brigade's primary fighting systems and into unique reconnaissance and digital NBC warning and reporting equipment. Initially, four six-wheeled Fox M93A1 digital NBC reconnaissance systems will be provided to the brigade. With its crew size reduced from previous versions, the Fox system operates with advanced sensors at a significantly reduced operation and support cost.

Concurrent with the Fox fielding, the Chemical, Biological and Radiological Integrated Reconnaissance System (CBRIDS) is funded and in development, with prototypes available for the interim brigade's initial operational capability. CBRIDS sensors will be integrated into the interim brigade's selected Interim Armored Vehicle and provide significantly improved capabilities. These capabilities will include on-the-move, standoff chemical detection—a far more sensitive detection capability that detects toxic industrial chemicals—and for the first time on a single vehicle, fully integrated chemical and biological detection. CBRIDS is based on a modular design for future sensor upgrades (with intuitive software, advanced diagnostics, and onboard spares), which

BG J.A. Mangual

reduces costs for future developments, procurement, and operations and support.

The greatest improvement in NBC protection will be the Joint Service General Purpose Mask (JSGPM). Slated for introduction in 2005, the JSGPM replaces the M40 as the common mask for all ground forces across the Services. Lighter and less expensive than its predecessor, the JSGPM provides protection not only against chemical and biological agents on the battlefield, but against lethal industrial materials and toxins as well. The JSGPM will have an improved field of view, be compatible with all night vision and weapon sights, and allow for much easier breathing.

PM, Soldier

PM, Soldier is responsible for development, integrating, testing, acquiring, fielding, and managing the total life cycle of soldier systems. For more information on PM, Soldier, refer to the article on PM, Soldier's Land Warrior Program in the March-April 2000 issue of *Army AL&T* magazine (Page 47).

PM, Soldier Support

PM, Soldier Support assists the soldier in strategic, operational, and tactical environments. PM, Soldier Support provides and develops systems that focus on strategic airdrop operations and soldier "life support." These systems include cargo and personnel airdrop equipment, and systems such as field laundries, showers, and latrines; nonpowered heaters; both rigid (hardwall) and softwall (tent-like) shelters; and field-feeding equipment.

Specific PM, Soldier Support initiatives that support the CSA's guidance to improve strategic responsiveness encompass the design, development, and fielding of airdrop systems in support of strategic C-17 and C-5 operations, mass airborne assaults, special operations, resupply, and humanitarian relief efforts. Support focuses on increasing strategic payloads, increasing operational flexibility, improving safety, and improving accuracy and reliability of airdrop equipment. Examples of strategic airdrop systems currently under

development include the Dual Row Airdrop System, the Universal Static Line, and the Advanced Tactical (Personnel) Parachute System. To support the objective force, precision airdrop for the Future Combat Vehicle and low-altitude heavy precision airdrop will both be addressed.

PM, Soldier Support will also reduce the logistical footprint of deployed forces and enhance deployability by fielding a variety of soldier life-support systems. These systems support soldiers in austere field environments and enhance combat readiness, quality of life, and morale. The following items will support the initial or interim brigade: the family of Cargo Bed Covers, Lightweight Maintenance Enclosure, and the Modular General Purpose Tent System.

Examples of field-feeding and field-service systems that support the CSA's vision include the Containerized Kitchen, the Battlefield Kitchen, the Modern Burner Unit, the Advanced Food Sanitation Center, and the Laundry Advanced System.

Soldier support systems are wise investments. Wholesale aspects of the Army are improved for relatively low funding amounts.

PM, Smoke/Obscurants

PM, Smoke/Obscurants manages and directs development, production, and initial fielding of new and major modifications and product improvements to smoke and obscurant systems and products. Programs cover all technical disciplines in the acquisition life cycle necessary to provide Army forces with a state-of-the-art battlefield obscurant capability. These programs provide products and systems that focus on large-area and rapid-obscuration smoke. Large-area smoke provides visual, infrared, and millimeter-wave obscurant capability to our forces. Rapid obscurant also provides visual, infrared, and millimeter-wave obscurant capabilities, but is designed primarily for self-protection for maneuver vehicles.

PM, Smoke/Obscurants provides systems that defeat threat sensors across the electromagnetic spectrum. Obscurants provide a low-cost, lightweight alternative to expensive and logistically burdensome heavy armor and munitions and electronics-based countermeasures. In addition to threat systems operating in the visual band, obscurants block thermal target sights, laser designators, laser range finders, radar systems, and millimeter-wave guidance systems for a full-spectrum defeat capability.

PM, Force Provider

Force Provider, the Army's premier base camp, contributes to Shinseki's vision by increasing operational readiness and enhancing the quality of life in support of military forces deployed all over the world. Force Provider modules, which can support 550-plus soldiers each, offer climate-controlled billeting; quality food and dining facilities; hygiene services; and morale, welfare, and recreation facilities. The ongoing insertion of new technology will continue to increase the efficiency of the base camp while decreasing operation and maintenance costs.

SBCCOM RDEC

The SBCCOM RDEC focuses on technology developments that will transition through the engineering and manufacturing development process before they are embedded in a fielded item. SBCCOM's RDEC achievements will primarily find their way to the objective systems of the new vision (2012) and, to a lesser extent, the interim and initial systems.

SBCCOM's RDEC is the result of the merger of the Edgewood and Natick Research, Development and Engineering Centers. The combined RDEC is benefiting from increased efficiencies, business opportunities, and joint ventures. Within the new single RDEC, however, the identities of the soldier and the chemical/biological mission areas remain largely intact. The two centers have been renamed the Edgewood Chemical Biological Center (ECBC) and the Natick Soldier Center (NSC). The DOD Combat Feeding Program is part of the Natick Soldier Center.

NSC

NSC is perfectly poised to enhance the new Army vision by conducting technology and engineering research and development that maximizes the soldier's survivability, sustainability, mobility, combat effectiveness, and quality of life.

Challenges to today's warrior systems are overall weight, power, energy, fightability, and affordability. The Army vision's goals will be significantly enhanced by integrating the efforts of multiple agencies in applying technology aimed at meeting the thresholds established for future warfighters. For instance, today's power threshold for a 12-hour mission is 1.6 pounds. In 2010, power for a 72-hour mission will meet a threshold of 0.5 pounds. These challenges can be achieved only through the coordinated efforts of multiple agencies with a single clear goal of an enhanced, integrated soldier system.

An airdrop development program involving pneumatic muscle technology will result in vehicles that can roll on or off an aircraft with less rigging. Significant deploy-

ment enhancements will be achieved along with training of the sustainment personnel required to support the deployment. This capability will be available in the FY08 time-frame and be ready for use with the objective vehicles for the Army vision.

DOD Combat Feeding Program. The intent of the Department of Defense Combat Feeding Program (part of NSC) is to provide combat feeding systems (combat rations and field food service equipment and systems) that are lighter, require less fuel and water, and enable rapid power projection.

Innovations in equipment and energy technologies, particularly thermal fluid heat transfer and cogeneration, will revolutionize combat field-feeding equipment. These innovations will reduce the logistical footprint and replenishment demands through a near 30-percent weight and cube reduction and a 50-percent fuel and water reduction.

Self-heated meals for remote site feeding will incorporate advances in chemical heating to provide compact, self-contained, self-heating meal modules that automatically heat meals for remote site feeding. This will reduce meal preparation costs, logistical footprint, weight, and labor for remote site feeding.

Combat ration-enhanced warfighter logistics efforts are expected to create a system that tailors the components to the combat situation and improves mobility. Revolutionary combat ration processing and packaging technologies and modeling and simulation will be used to develop a sensor-based ration selection and logistics tracking system and an integrated ration supply and distribution system. This ration system will ensure that warriors receive the right nutrients at the right time to optimize performance and ensure sustainability at every point along the spectrum of operations. Biosensors will be developed to provide real-time rapid detection of food quality and safety.

ECBC

ECBC supports the Army vision through a series of technology transitions, beginning almost immediately and continuing throughout the life of the objective force.

In support of the interim brigade, the portable Sorbent Decontamination System will be used for immediate decontamination. Immediate decontamination removes gross contaminants, prevents the spread of chemical contamination, and preserves the integrity of mission-oriented protective posture gear.

A new generation of chemical and biological agent decontaminants, based on enzymes, natural products, and enzyme-compatible chemical catalysts, will be developed for use wherever water can be tolerated (vehicles, equipment, large facilities, and possibly personnel and casualties). The material

would be packaged as a powder, representing a 25- to 50-fold reduction in the current quantity of decontaminants required. The decontaminant would be prepared in the field by dissolving it in water or any available water-based material. It will be relatively nontoxic, noncorrosive, nonflammable, and environmentally safe. This will be available for the objective force and may be available for the interim force.

Regenerative filtration offers several opportunities to provide filtered air inside future combat vehicles. Regenerative filtration involves several chemical agent removal processes that differ from the current single-pass filtration approach. The filters renew themselves, thereby eliminating or greatly reducing the logistics train associated with filter replacement.

The ECBC also conducts the Army technology base program in smoke and obscurants. In an environment of lighter, "less armor" protection vehicles such as those of the Future Combat System, smoke technologies that provide visible, infrared, and millimeter-acquisition and hit-avoidance protection from enemy weapon systems will improve survivability.

Through biotechnology, materials will be created for incorporation into low-observable coatings or for obscurant systems. These materials will be nontoxic, biodegradable, and absorb electromagnetic radiation from the ultraviolet to the near-infrared regions of the spectrum.

Conclusion

As Shinseki pointed out, "Soldiers enable America to fulfill its world leadership responsibilities of safeguarding our national interests, preventing global calamity, and making the world a safer place." By taking care of our soldiers with the latest advances in food, clothing, and shelter technology, SBCCOM enables our soldiers to best serve their Nation and the world. SBCCOM is also contributing to improved national security by addressing nuclear, biological and chemical threats.

BG J.A. "YOGI" MANGUAL serves as the Deputy for Acquisition and Readiness for SBCCOM. He also serves as Commander of the Soldier Systems Center. He has a B.A. in economics from Norwich University and an M.S. in contracts and acquisition management from the Florida Institute of Technology.
